

ENVIRONMENTAL ASSESSMENT
TAINTER GATE CABLE REPLACEMENT
LAKE RED ROCK
MARION COUNTY, IOWA

EXECUTIVE SUMMARY

Red Rock Dam is located in Marion County, Iowa, on the Des Moines River, approximately 35 miles southeast of the City of Des Moines and 142 river miles upstream from its confluence with the Mississippi River. The Lake Red Rock outlet control structure was designed and constructed with the lake water level at 725 feet National Geodetic Vertical Datum (NGVD). The outlet structure consists of five cable operated tainter gates. There are four 1" diameter-lifting cables located at each side of the tainter gates to be used to raise (open) or lower (close) the tainter gates. The Lake Red Rock conservation pool was raised in the spring of 1992 from an elevation of 734 feet NGVD to an elevation of 742 feet NGVD to reacquire sufficient conservation storage for low flow augmentation that had been lost due to sedimentation. This elevation is six feet above the crest of the dam spillway and seven feet above the gate sill and tainter gate lifting cable connection bracket when the tainter gates are in their normal closed position.

The tainter gate cables have an estimated service life of 15 years. The vinyl paint system on the tainter gates, applied in 1989, has an expected service life of 25-30 years. The next scheduled repair and maintenance of the tainter gate cables will occur in 2007; however, at the current elevation of the conservation pool, the tainter gate cables and brackets are permanently submerged, making performance of scheduled repair and maintenance on the tainter gates and lifting cables virtually impossible without dewatering the tainter gate bays.

Alternatives for dewatering the tainter gate bays to perform the necessary repair and maintenance of the tainter gates were developed and include:

- No action;
- Installation of a traveling bulkhead system;
- A periodic drawdown to elevation 732 feet;
- A one time 10-foot drawdown with future installation of a traveling bulkhead system;
- Installation of traditional bulkheads; or
- Use of cofferdams.

The preferred long-term alternative is installation of the traveling bulkhead system. However, the estimated cost for the bulkhead system including planning, design, and construction management is \$2,330,000. Funding and subsequent construction, prior to the scheduled repair and maintenance in 2007/2008, for this alternative is uncertain.

To ensure that the required repair and maintenance occurs, the **preferred alternative** identified in this Environmental Assessment is a one-time 10-foot drawdown and performance of the scheduled repair and maintenance to the tainter gates and cables during the fall of 2007, with future installation of a traveling bulkhead system. The proposed drawdown would begin in calendar year 2007, immediately after Labor Day. In an effort to minimize sloughing of the bank

during a drawdown, the level of the lake would be lowered at a rate of 0.5 feet per day so that a 10-foot drawdown would require 20 days to complete. Figure 2 depicts the water depths at maximum drawdown. Figure 3 shows the areas that would be exposed by the drawdown.

The estimated time required for tainter gate cable replacement is about four weeks based on a 45-hour workweek or two weeks based on a 93-hour workweek utilizing two shifts. Some work could begin before the drawdown elevation of 732 feet NGVD is attained. The estimated time for touch-up painting, which could be done in conjunction with cable replacement, is 4 to 7 weeks. When the work is completed, the pool would be raised as quickly as possible, while still maintaining outflows of at least 300 cubic feet per second, as required by the Water Control Plan, until the conservation pool elevation of 742 feet NGVD is attained. Based on inflow records since the lake became operational, the average time needed to reach the conservation pool elevation is approximately 54 days during this time of year. The total time required for the drawdown, cable replacement, touch-up painting, and pool raise under ideal conditions would be approximately 3.4 to 4 months; however, the time to raise the pool is entirely weather dependent.

This Environmental Assessment evaluates the alternatives and assesses the impacts of the preferred alternative. Construction activities, concentrated at the dam, and the drawdown itself would temporarily disrupt wildlife and human use of the project lands. This action ensures the long-term project purpose of flood control is maintained at the current levels, without any reduction in the life, health, and safety to local and regional human populations.